IBM BladeCenter HS23 high-performance blade server

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At a glance

The IBM® BladeCenter® HS23 is a versatile blade server that offers outstanding performance for virtualization with new levels of memory capacity, CPU performance, and highly scalable I/O.

Overview

The IBM BladeCenter HS23 offers high performance balanced with flexible, scalable configuration options and simple management in an efficient server designed to run a broad range of workloads exceptionally well.

Versatile:

- A feature-rich design enables the HS23 to run a broad range of workloads, including infrastructure, virtualization, and enterprise applications. This makes it ideal for cloud computing.
- Integrated 10GbE Virtual Fabric allows for more scalable I/O solutions.
- An extensive choice of processors, memory, internal storage, and I/O options allows flexible configurations.
- The BladeCenter HS23 is supported in the BladeCenter H chassis (#8852), the BladeCenter HT chassis (#8740, #8750), the BladeCenter E chassis (#8677), and the BladeCenter S chassis (#8886). Some configuration limitations apply; refer to the Limitations section.

Easy to use:

- Simplify deployment of infrastructure for faster time-to-value with IBM FastSetup.
- Two hot-swap storage bays support SAS and SATA (which includes solid-state) drives, enabling drives to be removed easily for quick replacement.
- An optional embedded hypervisor helps enable "instant virtualization."
- The Integrated Management Module provides remote supervision and cKVM functions as standard.
- Light path diagnostics and Predictive Failure Analysis help enable quick serviceability and maintenance.

Performance optimized:

- Next-generation Intel Xeon™ processor E5-2600 product family
- High memory capacity with 16 DDR3 VLP memory DIMM slots supporting 1600 MHz memory and up to 256 GB of DDR3 memory

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- High-speed I/O on the blade with integrated 10GbE Virtual Fabric
- Support for running two DIMMs per memory channel at 1600 MHz
- Optional low-power processor, solid-state drives, and low-power memory DIMMs
- Energy-efficient 1.35 volt memory DIMM support
- Support for IBM Systems Director Active Energy Manager™ to help monitor and cap power consumption
- Innovative component layout and blade design to help keep the blade up and running even under demanding conditions

Options included in this Announcement

The IBM BladeCenter GPU Expansion Blade II:

The IBM BladeCenter GPU Expansion Blade II provides the capability to attach next-generation graphics processing unit (GPU) technology on select server blades. This offering is ideal for applications requiring high levels of acceleration and visualization performance. This product ships integrated with the NVIDIA Tesla M2070Q, Tesla M2075, or Tesla M2090. In addition, the IBM BladeCenter GPU Expansion Blade II is stackable, allowing clients to stack up to four GPU Expansion Blades on a single compute blade (support for four GPU Expansion Blade stacking only via specific machine type for HS22 and only by contacting your IBM Sales Representative), thereby offering a unique density advantage versus the competition. This GPU expansion unit is supported only on selected server blades.

The IBM BladeCenter GPU Expansion Blade II:

- Is supported on the IBM BladeCenter HS22 (7870) or HS23 (7875).
- Offers a unique stacking capability that allows users to stack up to four GPU Expansion Blades on a single HS22 or HS23 server blade. HS22 stacking support is available for up to four GPU Expansion Blades on a single server blade via specific HS22 machine type. Contact your IBM Sales Representative for details.
- Provides users with access to the high-speed I/O slot (CFFh) in a stacked configuration.
- Ships integrated with the NVIDIA Tesla M2090, M2075, or M2070Q.

The Emulex 10GbE Virtual Fabric Adapter II for IBM BladeCenter HS23 (81Y3120) and Emulex 10GbE Virtual Fabric Adapter Advanced II for IBM BladeCenter HS23 (90Y9332) are new options available to the existing IBM BladeCenter Virtual Fabric portfolio. These adapters are supported on the new HS23 blade to enable up to four uplink/downlink ports for increased I/O bandwidth and maximum performance. The combination of HS23 and Emulex options enables clients to simplify their I/O infrastructure by reducing the number of switches needed inside the chassis while supporting Ethernet and Virtual NICs using the same hardware components.

Key prerequisites

- BladeCenter chassis
- Monitor, keyboard, and mouse for setup
- Network switch module
- Boot device, such as on-board HDD or network storage device
- Advanced Management Module with latest-level firmware
- Rack and appropriate PDUs and main power distribution

Planned availability date

- March 16, 2012:
  - IBM BladeCenter HS23 Models 91x, 92x, A1x, A2x, B1x, B2x, B3x, C1x, C2x, C3x, C4x, C5x, D1x, F1x

- IBM BladeCenter Options:
  - -- Additional Intel Xeon Processor E5-2600 Options
  - -- 1600MHz VLP RDIMM Options
  - -- 10Gb Interposer Card for IBM BladeCenter HS23
  - -- IBM Virtual Fabric Advanced Software Upgrade (LOM)
  - -- IBM BladeCenter PCI Express® Gen 2 Expansion Blade II
  - -- IBM BladeCenter GPU Expansion Blade II with NVIDIA Tesla M2070Q
  - -- IBM BladeCenter GPU Expansion Blade II with NVIDIA Tesla M2075
  - -- IBM BladeCenter GPU Expansion Blade II with NVIDIA Tesla M2090
- March 30, 2012:
  - IBM BladeCenter Options:
    - -- Emulex 10GbE VFA II for IBM BladeCenter HS23
- June 8, 2012:
  - BladeCenter HS23 Models G1x, G2x
  - IBM BladeCenter Options:
    - -- Emulex 10GbE VFA Advanced II for IBM BladeCenter HS23
    - -- Virtual Fabric Advanced FOD Upgrade for IBM BladeCenter HS23

Description

BladeCenter HS23

High-performance, blade server subsystem

The IBM BladeCenter HS23 blade server is high-throughput, two-way, SMP-capable, and highly scalable when you add memory and other options.

The BladeCenter HS23 can have up to two Intel Xeon processors. The processor board has the following major components:

- Two Socket R (LGA2011) sockets for two Intel Xeon E5-2600 processors (two processors may be shipped standard).
- Sixteen DDR3 VLP DIMM memory sockets.
- One Emulex BladeEngine 3 (BE3) controller with Dual 10Gb + Dual 1Gb Ethernet and Features On Demand upgrading to FCoE and iSCSI Hardware Offload.
- One LSI 2004 SAS/SATA Controller.
- Two SAS/SATA connectors for two 2.5-inch SAS or SATA storage drives.
- One Renesas SH7757 Super Baseboard Management Controller with Integrated VGA Controller.
- Two VHDM midplane connectors.
- One CFFh expansion connector.
- One CIOv daughter card connector.
- One TPM 1.2 chip.
- One internal USB connector for bootable Flash key.

The HS23 server memory is contiguous and is shared by both processors when both processors are installed. It is Error Correction Code (ECC) protected and supports up to256 GB using 4 GB, 8 GB,or 16 GB VLP DDR3 DIMMs on 16 DIMM connectors. The processors have integrated DDR3 memory controllers and interface directly to their eight associated DDR3 DIMMs. For each CPU, a minimum of one DIMM must be installed. Additional DIMMs may be installed one at a time as needed.

The HS23 supports the Intel Xeon processor E5-2600 product family. For these processors, memory speed is a specific attribute of the processor. The system

memory speed (that is, the speed at which the memory is actually running) depends on several factors including:

- CPU capability
- DIMM speed

Actual memory speed will be the lowest of the two.

The HS23 supports memory mirroring. Chipkill is supported in Independent mode when x4-based DIMMs are installed.

Additional features

- The BladeCenter HS23 system board contains 16 DIMM connectors (30 mm blade).
  - Chipkill is supported in Independent mode when x4-based DIMMs are installed.
- One or two hot-swap SATA or SAS devices are supported in the base blade.
- One Emulex BladeEngine 3 (BE3) controller with Dual 10Gb + Dual 1Gb Ethernet is provided and can be upgraded with Features On Demand to FCoE and iSCSI Hardware Offload.

BladeCenter HS23 blade servers are designed for high throughput from processor to memory, and to bus I/O.

These features, combined with Symmetric Multi-Processing (SMP) capability and blade-thin density, make the HS23 an excellent choice for space- and power-constrained environments used for:

- Infrastructure applications
- Virtualization
- General enterprise applications

High-availability and serviceability features

- Hot-swap blades enable easy access to each blade server.
- The management module interfaces with each blade server for single systems management control.

The BladeCenter HS23 blade servers deliver reliability and serviceability.

Features include:

- High-performance ECC memory, combined with an integrated ECC memory controller, to help correct soft and hard single-bit memory errors, while reducing disruption of service to LAN clients.
- Chipkill memory correction for up to four bits per DIMM to help keep your blade server up and running.
- Memory hardware scrubbing, designed to correct many soft memory errors automatically without software intervention.
- ECC L2 cache processors to help improve data reliability and reduce downtime.
- PFA on SAS HDD options, memory, and processors to help alert the system administrator of imminent component failures.
- Support for Ethernet connections
  - Failover, adapter fault tolerance
  - PXE 2.0 Boot Agent
  - Wake on LAN
  - Load balancing or teaming
- Integrated management processor that supports diagnostic, reset, POST, and auto-recovery functions, and monitors temperature and voltage. Alerts are

generated when certain thresholds are exceeded (refer to the Limitations section for restrictions).

Optional add-ons (available for an additional charge)

- The Emulex 10GbE Virtual Fabric Adapter II for IBM BladeCenter HS23 (81Y3120) and Emulex 10GbE Virtual Fabric Adapter Advanced II for IBM BladeCenter HS23 (90Y9332) are new options available to the existing IBM BladeCenter Virtual Fabric portfolio. These adapters are supported on the new HS23 blade to enable up to four uplink/downlink ports for increased I/O bandwidth and maximum performance. The combination of HS23 and Emulex options enables clients to simplify their I/O infrastructure by reducing the number of switches needed inside the chassis while supporting Ethernet and Virtual NICs using the same hardware components.
- Active Energy Manager (AEM) is positioned as a key component of the energy-efficient technologies and services of IBM , which are part of the IBM Project Green initiative that began May 2007. AEM measures, monitors, and manages the energy management components built into IBM servers and provides a cross-platform management solution. AEM also retrieves temperature and power information via wireless sensors and collects alerts, events, and data from certain facility providers related to power and cooling equipment.
- BladeCenter Open Fabric Manager is designed to help you manage growth and complexity by making it easy to manage I/O and network interconnects for up to 100 BladeCenter chassis - up to 1,400 blade servers. BladeCenter Open Fabric Manager helps make blade deployment easy: once installed, the utility is resident in the Advanced Management Module (AMM) so you can preconfigure LAN and SAN connections. Thus, I/O connections are made automatically when you plug in a blade. And no special tools or training is required; just manage with the easy-to-use Graphical User Interface (GUI).

IBM ToolsCenter

The IBM System x® ToolsCenter is a collection of system management tools to help manage your HS23 blade servers and BladeCenter environment. ToolsCenter helps make managing your server environment less complicated, more productive, and more cost-effective.

These tools include:

- Deployment

  IBM ServerGuide is a tool that simplifies the process of installing and configuring IBM System x and BladeCenter servers. ServerGuide automates installation of Microsoft™ Windows™ server operating systems, device drivers, and other system components, with minimal user intervention.

  The ServerGuide Scripting Toolkit enables you to tailor and build custom hardware deployment solutions. It provides hardware configuration utilities and operating system (OS) installation examples for IBM System x and BladeCenter x86-based hardware. The ServerGuide Scripting Toolkit, Windows Edition enables you to create a bootable Windows Preinstallation Environment (Windows PE) 2.1 CD or DVD.

  BladeCenter Start Now Advisor is a configuration tool that can help you quickly configure components of the BladeCenter chassis. It automatically updates the firmware for selected chassis components, and provides you with the option of saving your configuration. The Start Now Advisor guides you through the process of connecting your computer to the chassis, either over a network or through a direct attachment to the Ethernet port on the Advanced Management Module.

- Configuration

  An Advanced Settings Utility (ASU) systems configuration utility provides a command line interface, unattended scripting capability, and support on multiple operating-system platforms.

  Storage Configuration Manager (SCM) is a scalable and integrated storage management tool for both internal and external storage subsystems for IBM System x and BladeCenter . Storage Configuration Manager is an open-

standards-based management tool that provides a uniform and rich user interface that is easy to use.

- Updates

  The UpdateXpress System Packs (UXSPs) contain a bundle of online firmware and device driver updates for your server. UXSPs facilitate the downloading and installation of drivers and firmware for a given system and verify that you are working with a complete set of updates which have been tested together.

  Bootable Media Creator pulls current updates for firmware and drivers from an IBM website and creates custom bootable media to CD, DVD, or USB key.

- Diagnostics

  Dynamic System Analysis (DSA) collects and analyzes system information to aid in diagnosing system problems. DSA creates a merged log that helps provide easy identification of cause-and-effect relationships from different log sources in the system.

BladeCenter Advanced Management Module

The BladeCenter HS23 is supported on the Advanced Management Module.

Use the Advanced Management Module in the BladeCenter to manage the BladeCenter and obtain vital system information about your installed BladeCenter HS23 servers. The management module communicates with the blade servers within the BladeCenter via an RS-485 intermanagement network. This network relays vital information about individual blade servers, such as:

- Voltages
- Powersupply status
- Memory status
- Fan status
- HDD status
- Error and status log

You receive status and control of all blade servers within the BladeCenter . You can shut down and restart any blade server from anywhere on the network to help save time and costs associated with travel to the actual installation.

These manageability functions are provided through a self-contained web page, creating an easy and familiar way to help administrators monitor, control, and maintain high availability.

BladeCenter HS23 model configurations

IBM BladeCenter HS23

System SEO number	Processor	L2 cache	Memory
IBM BladeCenter HS23			
7875-A1G	1 x 1.8 GHz Intel Xeon E5-2603 4c 80w	10 MB	1x4 GB
7875-A2G	1 x 2.4 GHz Intel Xeon E5-2609 4c 80w	10 MB	4x4 GB
7875-B1G	1 x 2.0 GHz Intel Xeon E5-2620 6c 95w	15 MB	4x4 GB
7875-B2G	1 x 2.5 GHz Intel Xeon E5-2640 6c 95w 10Gb Interposer Card	15 MB	4x4 GB

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 7875-B3G  1 x 2.3 GHz 15 MB       4x4 GB
           Intel Xeon E5-2630 6c 95w
            10Gb Interposer Card

 7875-C1G  1 x 2.0 GHz 20 MB       4x4 GB
           Intel Xeon E5-2650 8c 95w
            10Gb Interposer Card

 7875-C2G  1 x 2.2 GHz 20 MB       4x4 GB
           Intel Xeon E5-2660 8c 95w
            10Gb Interposer Card

 7875-C3G  1 x 2.4 GHz 20 MB       4x4 GB
           Intel Xeon E5-2665 8c 115w
            10Gb Interposer Card

 7875-C4G  1 x 2.6 GHz 20 MB       4x4 GB
           Intel Xeon E5-2670 8c 115w
            10Gb Interposer Card

 7875-C5G  1 x 2.7 GHz 20 MB       4x4 GB
           Intel Xeon E5-2680 8c 130w
            10Gb Interposer Card

 7875-D1G  1 x 1.8 GHz 20 MB       4x4 GB
           Intel Xeon E5-2650L 8c 70w   RAID
            10Gb Interposer Card

 7875-F1G  1 x 1.8 GHz 20 MB       4x4 GB
           Intel Xeon E5-2648L 8c 70w
            10Gb Interposer Card


IBM BladeCenter HS23 with Virtual Fabric

 7875-G1G      1 x 2.3 GHz 15 MB   4x4 GB
               Intel Xeon E5-2630 6c 95w
                Virtual Fabric Advanced Software Upgrade (LOM)
                Emulex 10GbE VFA Advanced II Adapter


 7875-G2G      1 x 2.6 GHz 20 MB   4x4 GB
               Intel Xeon E5-2670 8c 115w
                Virtual Fabric Advanced Software Upgrade (LOM)
                Emulex 10GbE VFA Advanced II Adapter

IBM BladeCenter HS23: Foundation for Cloud

 7875-91G      2 x 2.0 GHz 15 MB  16x8 GB
               Intel Xeon E5-2620 6c 95w
                Virtual Fabric Advanced Software Upgrade (LOM)
                IBM USB Memory Key for VMWare ESXi 5.0
                IBM Systems Director Standard
                 Ed for X86 V6-Srvr Lic w/1 Yr S&S
                10Gb Interposer Card

 7875-92G      2 x 2.0 GHz 20 MB  16x8 GB
               Intel Xeon E5-2650 8c 95w
                Virtual Fabric Advanced Software Upgrade (LOM)
                IBM USB Memory Key for VMWare ESXi 5.0
                IBM Systems Director Standard
                 Ed for X86 V6-Srvr Lic w/1 Yr S&S
                10Gb Interposer Card


 **  Power supplied through BladeCenter chassis
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Accessibility by people with disabilities

A US Section 508 Voluntary Product Accessibility Template (VPAT) containing details on accessibility compliance can be requested at

http://www.ibm.com/able/product_accessibility/index.html

Product positioning

The BladeCenter HS23 offerings are positioned as high-density, compute-oriented blade servers offering lower-power-usage Intel Xeon processors.

The BladeCenter HS23 blades can require less space and power resources than traditional rack offerings because of their high-density design, reduced power requirements, and single environment systems management. This is an extremely important consideration for:

- Large enterprises
- Application service providers
- Scientific and technical computing businesses

Product number

Description	SEO number
IBM BladeCenter HS23	
	7875A1G
	7875A2G
	7875B1G
	7875B2G
	7875B3G
	7875C1G
	7875C2G
	7875C3G
	7875C4G
	7875C5G
	7875D1G
	7875F1G
IBM BladeCenter HS23 with Virtual Fabric	
	7875G1G
	7875G2G
IBM BladeCenter HS23: Foundation for Cloud	
	787591G
	787592G

Options

Options

Description	Part number
Intel Xeon Processor E5-2603 4C 1.8GHz 10MB Cache 1066MHz 80W	81Y9292
Intel Xeon Processor E5-2609 4C 2.4GHz 10MB Cache 1066MHz 80W	81Y9294
Intel Xeon Processor E5-2620 6C 2.0GHz 15MB Cache 1333MHz 95W	81Y9295
Intel Xeon Processor E5-2650 8C 2.0GHz 20MB Cache 1600MHz 95W	81Y9298
Intel Xeon Processor E5-2660 8C 2.2GHz 20MB Cache 1600MHz 95W	81Y9299
Intel Xeon Processor E5-2680 8C 2.7GHz 20MB Cache 1600MHz 130W	81Y9300
Intel Xeon Processor E5-2667 6C 2.9GHz 15MB	81Y9302

Cache 1600MHz 130W	
Intel Xeon Processor E5-2630L 6C 2.0GHz 15MB Cache 1333MHz 60W	81Y9304
Intel Xeon Processor E5-2650L 8C 1.8GHz 20MB Cache 1600MHz 70W	81Y9305
Intel Xeon Processor E5-2648L 8C 1.8GHz 20MB Cache 1600MHz 70W	94Y8562
Intel Xeon Processor E5-2658 8C 2.1GHz 20MB Cache 1600MHz 95W	94Y8565
Intel Xeon Processor E5-2637 2C 3.0GHz 5MB Cache 1600MHz 80W	94Y8570
Intel Xeon Processor E5-2640 6C 2.5GHz 15MB Cache 1333MHz 95W	94Y8571
Intel Xeon Processor E5-2630 6C 2.3GHz 15MB Cache 1333MHz 95W	94Y8572
Intel Xeon Processor E5-2670 8C 2.6GHz 20MB Cache 1600MHz 115W	94Y8589
Intel Xeon Processor E5-2665 8C 2.4GHz 20MB Cache 1600MHz 115W	94Y8671
IBM BladeCenter GPU Expansion Blade II with NVIDIA Tesla M2075	68Y7478
IBM BladeCenter GPU Expansion Blade II with NVIDIA Tesla M2070Q	68Y7479
IBM BladeCenter PCI Express Gen 2 Expansion Blade II	68Y7484
10Gb Interposer Card for IBM BladeCenter HS23	94Y8550
IBM BladeCenter GPU Expansion Blade II with NVIDIA Tesla M2090	00D6881
IBM Virtual Fabric Advanced Software Upgrade (LOM)	90Y9310
Emulex 10GbE VFA II for IBM BladeCenter HS23	81Y3120
Emulex 10GbE VFA Advanced II for IBM BladeCenter HS23	90Y9332
Virtual Fabric Advanced FOD Upgrade for IBM BladeCenter HS23	90Y9350
4GB (1x4GB, 1Rx4, 1.5V) PC3-12800 CL11 ECC DDR3 1600MHz VLP RDIMM	90Y3147
4GB (1x4GB, 2Rx8, 1.5V) PC3-12800 CL11 ECC DDR3 1600MHz VLP RDIMM	90Y3148
8GB (1x8GB, 2Rx4, 1.5V) PC3-12800 CL11 ECC DDR3 1600MHz VLP RDIMM	90Y3149

Pseudo Options

Description	Part number
Intel Xeon Processor E5-2603 4C 1.8 GHz 10 MB Cache 1066 MHz 80W	81Y9471
Intel Xeon Processor E5-2609 4C 2.4 GHz 10 MB Cache 1066 MHz 80W	81Y9473
Intel Xeon Processor E5-2620 6C 2.0 GHz 15 MB Cache 1333 MHz 95W	00D6692
Intel Xeon Processor E5-2630 6C 2.3 GHz 15 MB Cache 1333 MHz 95W	00D6700
Intel Xeon Processor E5-2640 6C 2.5 GHz 15 MB Cache 1333 MHz 95W	00D6699
Intel Xeon Processor E5-2650 8C 2.0 GHz 20 MB Cache 1600 MHz 95W	00D6693
Intel Xeon Processor E5-2660 8C 2.2 GHz 20 MB Cache 1600 MHz 95W	00D6694
Intel Xeon Processor E5-2680 8C 2.7 GHz 20 MB Cache 1600 MHz 130W	00D6695
Intel Xeon Processor E5-2667 6C 2.9 GHz 15 MB Cache 1600 MHz 130W	00D6696
Intel Xeon Processor E5-2630L 6C 2.0 GHz 15 MB Cache 1333 MHz 60W	00D6697
Intel Xeon Processor E5-2650L 8C 1.8 GHz	00D6698

20 MB Cache 1600 MHz 70W	
Intel Xeon Processor E5-2670 8C 2.6 GHz	00D6701
20 MB Cache 1600 MHz 115W	
Intel Xeon Processor E5-2637 2C 3.0 GHz	94Y8582
5 MB Cache 1600 MHz 80W	
Intel Xeon Processor E5-2648L 8C 1.8 GHz	94Y8586
20 MB Cache 1600 MHz 70W	
Intel Xeon Processor E5-2658 8C 2.1 GHz	94Y8585
20 MB Cache 1600 MHz 95W	
Intel Xeon Processor E5-2665 8C 2.4 GHz	00D6702
20 MB Cache 1600 MHz 115W	
Blade Cover	00D6676
CPU Heat Sink Filler	00D6677
Labels for HS23 Blade Base	00D6678
4GB (1x4GB, 1Rx4, 1.5V) PC3-12800 CL11 ECC DDR3 1600MHz VLP RDIMM	90Y3150
4GB (1x4GB, 2Rx8, 1.5V) PC3-12800 CL11 ECC DDR3 1600MHz VLP RDIMM	90Y3151
8GB (1x8GB, 2Rx4, 1.5V) PC3-12800 CL11 ECC DDR3 1600MHz VLP RDIMM	90Y3152
System Documentation and Software-UK English	00D6687
System Documentation and Software-French	00D6688
System Documentation and Software-Spanish	00D6689
System Documentation and Software-German	00D6690
System Documentation and Software-Italian	00D6691

MTM Starting Point Models

Description	Machine	Model	Part number
BladeCenter HS23	7875	FT1	7875FT1

Publications

The *Installation and User's Guide* is shipped as softcopy on CD-ROM.

The publication *Installation and User's Guide,* in US English and translation versions, is available from

http://www-304.ibm.com/systems/support/

The IBM Systems Information Center provides you with a single information center where you can access product documentation for IBM systems hardware, operating systems, and server software. Through a consistent framework, you can efficiently find information and personalize your access. The IBM Systems Information Center is at

http://publib14.boulder.ibm.com/infocenter/systems

IBM Publications Center Portal

http://www.ibm.com/shop/publications/order

The Publications Center is a worldwide central repository for IBM product publications and marketing material with a catalog of 70,000 items. Extensive search facilities are provided, as well as payment options via credit card. A large number of publications are available online in various file formats, which can currently be downloaded free of charge.

Services

Global Technology Services

IBM services include business consulting, outsourcing, hosting services, applications, and other technology management.

These services help you learn about, plan, install, manage, or optimize your IT infrastructure to be an on-demand business. They can help you integrate your high-speed networks, storage systems, application servers, wireless protocols, and an array of platforms, middleware, and communications software for IBM and many non-IBM offerings. IBM is your one-stop shop for IT support needs.

For details on available services, contact your IBM representative or visit

http://www.ibm.com/services/

For details on available IBM Business Continuity and Recovery Services, contact your IBM representative or visit

http://www.ibm.com/services/continuity

For details on education offerings related to specific products, visit

http://www.ibm.com/services/learning/index.html

Select your country, and then select the product as the category.

Technical information

Specified operating environment

Physical specifications

BladeCenter HS23

	7875-A1G
Processor	Intel Xeon E5-2603 4 core 80w
Int. speed	1.80 GHz
Max. mem. speed	1066 MHz
Interconnect speed	6.4 GT/s
Number standard	1
Maximum	2
L2 cache	10 MB
Memory (VLP ECC DDR3)	4 GB
DIMMs (Standard)	1 x 4 GB
DIMM sockets	16
Capacity	256 GB [1]
Video	SVGA
Memory	16 MB
Disk controller	SAS/SATA
Channels	4
Connector int.	2
Connector ext.	2 (Optional)
Storage drives	0
Connectors	2
Internal capacity	2 TB [2]

Total storage drive bays	2
CFFh Expansion Slots	1
CIOv Expansion Slots	1
Management proc.	Standard
Ethernet controller	Dual 1Gb + Dual 10Gb
FC card	Optional

	7875-A2G
Processor	Intel Xeon E5-2609 4 core 80w
Int. speed	2.40 GHz
Max. mem. speed	1066 MHz
Interconnect speed	6.4 GT/s
Number standard	1
Maximum	2
L2 cache	10 MB
Memory (VLP ECC DDR3)	16 GB
DIMMs (Standard)	4 x 4 GB
DIMM sockets	16
Capacity	256 GB [1]
Video	SVGA
Memory	16 MB
Disk controller	SAS/SATA
Channels	4
Connector int.	2
Connector ext.	2 (Optional)
Storage drives	0
Connectors	2
Internal capacity	2 TB [2]
Total storage drive bays	2
CFFh Expansion Slots	1
Management proc.	Standard
CIOv Expansion Slots	1
Ethernet controller	Dual 1Gb + Dual 10Gb
FC card	Optional

IBM BladeCenter HS23

	7875-B1G
Processor	Intel Xeon E5-2620 6 core 95w
Int. speed	2.93 GHz
Max. mem. speed	1333 MHz
Interconnect speed	7.2 GT/s
Number standard	1
Maximum	2
L2 cache	15 MB
Memory (VLP ECC DDR3)	16 GB
DIMMs (Standard)	4 x 4 GB
DIMM sockets	16
Capacity	256 GB [1]
Video	SVGA
Memory	16 MB
Disk controller	SAS/SATA
Channels	4
Connector int.	2
Connector ext.	2 (Optional)
Storage drives	0
Connectors	2

Internal capacity	2 TB [2]
Total storage drive bays	2
CFFh Expansion Slots	1
CIOv Expansion Slots	1
Management proc.	Standard
Ethernet controller	Dual 1Gb + Dual 10Gb
10Gb Interposer Card	Standard
FC card	Optional

7875-B2G

Processor	Intel Xeon E5-2640 6 core 95w
Int. speed	2.50 GHz
Max. mem. speed	1333 MHz
Interconnect speed	7.2 GT/s
Number standard	1
Maximum	2
L2 cache	15 MB
Memory (VLP ECC DDR3)	16 GB
DIMMs (Standard)	4 x 4 GB
DIMM sockets	16
Capacity	256 GB [1]
Video	SVGA
Memory	16 MB
Disk controller	SAS/SATA
Channels	4
Connector int.	2
Connector ext.	2 (Optional)
Storage drives	0
Connectors	2
Internal capacity	2 TB [2]
Total storage drive bays	2
CFFh Expansion Slots	1
CIOv Expansion Slots	1
Management proc.	Standard
Ethernet controller	Dual 1Gb + Dual 10Gb
10Gb Interposer Card	Standard
FC card	Optional

7875-B3G

Processor	Intel Xeon E5-2630 6 core 95w
Int. speed	2.30 GHz
Max. mem. speed	1333 MHz
Interconnect speed	7.2 GT/s
Number standard	1
Maximum	2
L2 cache	15 MB
Memory (VLP ECC DDR3)	16 MB
DIMMs (Standard)	4 x 4 GB
DIMM sockets	16
Capacity	256 GB [1]
Video	SVGA
Memory	16 MB
Disk controller	SAS/SATA
Channels	4
Connector int.	2
Connector ext.	2 (Optional)
Storage drives	0

Connectors	2
Internal capacity	2 TB [2]
Total storage drive bays	2
CFFh Expansion Slots	1
CIOv Expansion Slots	1
Management proc.	Standard
Ethernet controller	Dual 1Gb + Dual 10Gb
10Gb Interposer Card	Standard
FC card	Optional

IBM BladeCenter HS23

	7875-C1G
Processor	Intel Xeon E5-2650 8 core 95w
Int. speed	2.00 GHz
Max. mem. speed	1600 MHz
Interconnect speed	8.0 GT/s
Number standard	1
Maximum	2
L2 cache	20 MB
Memory (VLP ECC DDR3)	16 GB
DIMMs (Standard)	4 x 4 GB
DIMM sockets	16
Capacity	256 GB [1]
Video	SVGA
Memory	16 MB
Disk controller	SAS/SATA
Channels	4
Connector int.	2
Connector ext.	2 (Optional)
Storage drives	0
Connectors	2
Internal capacity	2 TB [2]
Total storage drive bays	2
CFFh Expansion Slots	1
CIOv Expansion Slots	1
Management proc.	Standard
Ethernet controller	Dual 1Gb + Dual 10Gb
10Gb Interposer Card	Standard
FC card	Optional

	7875-C2G
Processor	Intel Xeon E5-2660 8 core 95w
Int. speed	2.20 GHz
Max. mem. speed	1600 MHz
Interconnect speed	8.0 GT/s
Number standard	1
Maximum	2
L2 cache	20 MB
Memory (VLP ECC DDR3)	16 GB
DIMMs (Standard)	4 x 4 GB
DIMM sockets	16
Capacity	256 GB [1]
Video	SVGA
Memory	16 MB
Disk controller	SAS/SATA
Channels	4

Connector int.	2
Connector ext.	2 (Optional)
Storage drives	0
Connectors	2
Internal capacity	2 TB [2]
Total storage drive bays	2
CFFh Expansion Slots	1
CIOv Expansion Slots	1
Management proc.	Standard
Ethernet controller	Dual 1Gb + Dual 10Gb
10Gb Interposer Card	Standard
FC card	Optional

7875-C3G

Processor	Intel Xeon E5-2665 8 core 115w
Int. speed	2.40 GHz
Max. mem. speed	1600 MHz
Interconnect speed	8.0 GT/s
Number standard	1
Maximum	2
L2 cache	20 MB
Memory (VLP ECC DDR3)	16 GB
DIMMs (Standard)	4 x 4 GB
DIMM sockets	16
Capacity	256 GB [1]
Video	SVGA
Memory	16 MB
Disk controller	SAS/SATA
Channels	4
Connector int.	2
Connector ext.	2 (Optional)
Storage drives	0
Connectors	2
Internal capacity	2 TB [2]
Total storage drive bays	2
CFFh Expansion Slots	1
CIOv Expansion Slots	1
Management proc.	Standard
Ethernet controller	Dual 1Gb + Dual 10Gb
10Gb Interposer Card	Standard
FC card	Optional

7875-C4G

Processor	Intel Xeon E5-2670 8 core 115w
Int. speed	2.60 GHz
Max. mem. speed	1600 MHz
Interconnect speed	8.0 GT/s
Number standard	1
Maximum	2
L2 cache	20 MB
Memory (VLP ECC DDR3)	16 GB
DIMMs (Standard)	4 x 4 GB
DIMM sockets	16
Capacity	256 GB [1]
Video	SVGA
Memory	16 MB
Disk controller	SAS/SATA

Channels	4
Connector int.	2
Connector ext.	2 (Optional)
Storage drives	0
Connectors	2
Internal capacity	2 TB [2]
Total storage drive bays	2
CFFh Expansion Slots	1
CIOv Expansion Slots	1
Management proc.	Standard
Ethernet controller	Dual 1Gb + Dual 10Gb
10Gb Interposer Card	Standard
FC card	Optional

	7875-C5G
Processor	Intel Xeon E5-2680 8 core 130w
Int. speed	2.70 GHz
Max. mem. speed	1600 MHz
Interconnect speed	8.0 GT/s
Number standard	1
Maximum	2
L2 cache	20 MB
Memory (VLP ECC DDR3)	16 GB
DIMMs (Standard)	4 x 4 GB
DIMM sockets	16
Capacity	256 GB [1]
Video	SVGA
Memory	16 MB
Disk controller	SAS/SATA
Channels	4
Connector int.	2
Connector ext.	2 (Optional)
Storage drives	0
Connectors	2
Internal capacity	2 TB [2]
Total storage drive bays	2
CFFh Expansion Slots	1
CIOv Expansion Slots	1
Management proc.	Standard
Ethernet controller	Dual 1Gb + Dual 10Gb
10Gb Interposer Card	Standard
FC card	Optional

IBM BladeCenter HS23

	7875-D1G
Processor	Intel Xeon E5-2650L 8 core 70w
Int. speed	1.80 GHz
Max. mem. speed	1600 MHz
Interconnect speed	8.0 GT/s
Number standard	1
Maximum	2
L2 cache	20 MB
Memory (VLP ECC DDR3)	16 GB
DIMMs (Standard)	4 x 4 GB
DIMM sockets	16
Capacity	256 GB [1]

Video	SVGA
Memory	16 MB
Disk controller	SAS/SATA
Channels	4
Connector int.	2
Connector ext.	2 (Optional)
Storage drives	0
Connectors	2
Internal capacity	2 TB [2]
Total storage drive bays	2
CFFh Expansion Slots	1
CIOv Expansion Slots	1
Management proc.	Standard
Ethernet controller	Dual 1Gb + Dual 10Gb
10Gb Interposer Card	Standard
FC card	Optional

IBM BladeCenter HS23

	7875-F1G
Processor	Intel Xeon E5-2648L 4 core 80w
Int. speed	1.80 GHz
Max. mem. speed	1600 MHz
Interconnect speed	8.0 GT/s
Number standard	1
Maximum	2
L2 cache	20 MB
Memory (VLP ECC DDR3)	16 GB
DIMMs (Standard)	4 x 4 GB
DIMM sockets	16
Capacity	256 GB [1]
Video	SVGA
Memory	16 MB
Disk controller	SAS/SATA
Channels	4
Connector int.	2
Connector ext.	2 (Optional)
Storage drives	0
Connectors	2
Internal capacity	2 TB [2]
Total storage drive bays	2
CFFh Expansion Slots	1
CIOv Expansion Slots	1
Management proc.	Standard
Ethernet controller	Dual 1Gb + Dual 10Gb
10Gb Interposer Card	Standard
FC card	Optional

IBM BladeCenter HS23 with Virtual Fabric

	7875-G1G
Processor	Intel Xeon E5-2630 6 core 95w
Int. speed	2.30 GHz
Max. mem. speed	1333 MHz
Interconnect speed	7.2 GT/s
Number standard	1
Maximum	2

L2 cache	15 MB
Memory (VLP ECC DDR3)	16 GB
DIMMs (Standard)	4 x 4 GB
DIMM sockets	16
Capacity	256 GB [1]
Video	SVGA
Memory	16 MB
Disk controller	SAS/SATA
Channels	4
Connector int.	2
Connector ext.	2 (Optional)
Storage drives	0
Connectors	2
Internal capacity	2 TB [2]
Total storage drive bays	2
CFFh Expansion Slots	1
CIOv Expansion Slots	1
Management proc.	Standard
Ethernet controller	Dual 1Gb + Dual 10Gb
FC card	Optional
Virtual Fabric Advanced Software Upgrade (LOM)	Standard
Emulex 10GbE VFA Advanced II Adapter for IBM BladeCeter HS23	1

7875-G2G

Processor	Intel Xeon E5-2670 8 core 115w
Int. speed	2.60 GHz
Max. mem. speed	1600 MHz
Interconnect speed	8.0 GT/s
Number standard	1
Maximum	2
L2 cache	20 MB
Memory (VLP ECC DDR3)	16 GB
DIMMs (Standard)	4 x 4 GB
DIMM sockets	16
Capacity	256 GB [1]
Video	SVGA
Memory	16 MB
Disk controller	SAS/SATA
Channels	4
Connector int.	2
Connector ext.	2 (Optional)
Storage drives	0
Connectors	2
Internal capacity	2 TB [2]
Total storage drive bays	2
CFFh Expansion Slots	1
CIOv Expansion Slots	1
Management proc.	Standard
Ethernet controller	Dual 1Gb + Dual 10Gb
FC card	Optional
Virtual Fabric Advanced Software Upgrade (LOM)	Standard
Emulex 10GbE VFA Advanced II Adapter for IBM BladeCeter HS23	1

IBM BladeCenter HS23: Foundation for Cloud

7875-91G

Processor	Intel Xeon E5-2620 6 core 95w
Int. speed	2.00 GHz
Max. mem. speed	1333 MHz
Interconnect speed	7.2 GT/s
Number standard	2
Maximum	2
L2 cache	15 MB
Memory (VLP ECC DDR3)	128 MB
DIMMs (Standard)	16 x 8 GB
DIMM sockets	16
Capacity	256 GB [1]
Video	SVGA
Memory	16 MB
Disk controller	SAS/SATA
Channels	4
Connector int.	2
Connector ext.	2 (Optional)
Storage drives	0
Connectors	2
Internal capacity	2 TB [2]
Total storage drive bays	2
CFFh Expansion Slots	1
CIOv Expansion Slots	1
Management proc.	Standard
Ethernet controller	Dual 1Gb + Dual 10Gb
10Gb Interposer Card	Standard
FC card	Optional
Virtual Fabric Advanced Software Upgrade (LOM)	Standard
IBM USB Memory Key for VMWare ESXi 5.0	Standard
IBM Systems Director Standard Ed for X86 V6-Srvr Lic w/1 Yr S&S	Standard

7875-92G

Processor	Intel Xeon E5-2650 8 core 95w
Int. speed	2.00 GHz
Max. mem. speed	1600 MHz
Interconnect speed	8.0 GT/s
Number standard	2
Maximum	2
L2 cache	20 MB
Memory (VLP ECC DDR3)	128 GB
DIMMs (Standard)	16 x 8 GB
DIMM sockets	16
Capacity	256 GB [1]
Video	SVGA
Memory	16 MB
Disk controller	SAS/SATA
Channels	4
Connector int.	2
Connector ext.	2 (Optional)
Storage drives	0
Connectors	2
Internal capacity	2 TB [2]
Total storage drive bays	2
CFFh Expansion Slots	1
CIOv Expansion Slots	1
Management proc.	Standard
Ethernet controller	Dual 1Gb + Dual 10Gb
10Gb Interposer Card	Standard
FC card	Optional

Virtual Fabric Advanced Software Upgrade (LOM)	Standard
IBM USB Memory Key for VMWare ESXi 5.0	Standard
IBM Systems Director Standard Ed for X86 V6-Srvr Lic w/1 Yr S&S	Standard

[1]Total system memory capacity is based on using 16 GB memory DIMMs.

[2]Capacities are based on installation of two 1 TB drives.

For latest information on supported HDD options, visit

http://www.ibm.com/servers/eserver/serverproven/compat/us/

Video subsystem

- Matrox video core
- Integrated on the blade

Supported HS23 video resolutions

Resolution	Maximum refresh rate supported	CRT support	CRT ISO 9241.3 compliance	Flat panel support
640 x 480	85 Hz	Yes	Yes	Yes
800 x 600	85 Hz	Yes	Yes	Yes
1024 x 768	75 Hz	Yes	Yes	Yes

Note: For resolutions supported by different operating systems, refer to the operating system documentation.

Dimensions - BladeCenter HS23

- Height: 24.5 cm (9.7 in)
- Depth: 44.6 cm (17.6 in)
- Width: 2.9 cm (1.14 in)
- Maximum weight: 5.4 kg (12 lb)

Note: Above dimensions and weights refer to a single-wide HS23. Addition of one or more Expansion Blades increases width and weight.

Electrical

- BladeCenter chassis: 200 to 240 (nominal) V ac; 50 Hz or 60 Hz
- BladeCenter HS23: 12.2 (nominal) V dc

Standards

This system supports or complies with the following standards:

- Multiprocessor Specification (MPS) 1.4
- Hardware-enabled to meet the International Organization for Standardization (ISO) 9241, Part 3

Equipment approvals and safety

- Russia/GOST ME01, IEC-60950-1, GOST R 51318.22-99, GOST R 51318.24-99, GOST R 51317.3.2-2006, GOST R 51317.3.3-99,
- IEC 60950-1 (CB Certificate and CB Test Report)
- CE Mark (EN55022 Class A, EN60950-1, EN55024, EN61000-3-2, EN61000-3-3)
- CISPR 22, Class A

Operating environment

- ASHRAE class A2
- Temperature: 10° to 35°C (50° to 95°F) to 914 m (3,000 ft)
- Relative humidity: 8% to 80% (noncondensing)

NEBS environment

- Air temperature:
  - Chassis on: 5° to 40°C (41° to 104°F) at altitude of -60 m (-197 ft) to 1,800 m (6,000 ft)
  - Chassis on (short term*): -5° to 55°C (23° to 131°F) at altitude of -60 m (-197 ft) to 1,800 m (6,000 ft)
  - Chassis on: 5° to 30°C (41° to 86°F) at altitude of 1,800 m (600 ft) to 4,000 m (13,000 ft)
  - Chassis on (short term*): -5° to 45°C (23° to 113°F) at altitude of 1,800 m (6,000 ft) to 4,000 m (13,000 ft)
  - Chassis off: -40° to 70°C (-40° to 158°F)
- Rate of temperature change: 30°C/hr (54°F/hr)
- Humidity:
  - Chassis on: 5% to 85%
  - Chassis on (short term*): 5% to 90% but not to exceed 0.024 kg water/kg of dry air
  - Chassis off: uncontrolled

(*) Note: A period of not more than 96 consecutive hours and a total of not more than 15 days in one year. (This refers to a total of 360 hours in any given year, but, no more than 15 occurrences during that one-year period.)

Hardware requirements

For attended installation of an operating system, this server requires a compatible:

- Keyboard
- Mouse
- Display

Unattended or remote installation may be performed without requiring some or all of these components. Review your unattended software installation program information for specific hardware configuration requirements.

For service, the server requires a compatible:

- Keyboard
- Mouse
- Display

When having the unit serviced, plan to have these components attached to your server either directly or indirectly via a console switch.

Software requirements

The following network operating systems have been tested for compatibility with the BladeCenter HS23:

- Microsoft :
  - Windows Server 2008 R2
  - Windows Server 2008 (32-bit) - Web/Std/Ent/DC
  - Windows Server 2008 (64-bit) - Web/Std/Ent/DC
  - Windows HPC Server 2008

  - Windows Server 2008 HPC Edition 2008
  - Windows Small Business Server 2008 - Std/Prem
  - Windows Server 2003 R2 (64-bit) - Web/Std/Ent/DC
- Linux™ :
  - Red Hat EL 6 (Server) 32-bit - Update 2
  - Red Hat EL 6 (Server) 64-bit (includes KVM) - Update 2
  - Red Hat EL 5 (Server) 32-bit - Update 7
  - Red Hat EL 5 (Server) 64-bit (includes KVM) - Update 7
  - Red Hat EL 5 (Server) 64-bit w/ Xen - Update 7
  - SUSE Linux ES 11 32-bit Service Pack 2
  - SUSE Linux ES 11 64-bit Service Pack 2
  - SUSE Linux ES 11 64-bit w/ Xen Service Pack 2
  - SUSE Linux ES 10 32-bit Service Pack 4
  - SUSE Linux ES 10 64-bit Service Pack 4
  - SUSE Linux ES 10 64-bit w/ Xen Service Pack 4
- Other:
  - VMware ESXi 5.0 - (VMWare vSphere 5.0)
  - VMware ESX 4.1 - Update 2
  - VMware ESXi 4.1 - Update 2

For additional information, support, certification, and versions of network operating systems, access

http://www.ibm.com/servers/eserver/serverproven/compat/us/

Compatibility

For detailed information about IBM and non-IBM devices, adapters, software, and network operating systems supported with System x servers, visit

http://www.ibm.com/servers/eserver/serverproven/compat/us/

Contact your IBM representative or IBM Business Partner, or refer to the *IBM Sales Manual* for information on the compatibility of hardware and software for System x servers. The *Sales Manual* is updated periodically as new features and options are announced that support these servers.

Limitations

- The BladeCenter HS23 contains 16 DIMM sockets.

  A maximum of 256 GB of system memory is supported by using a 16 GB DIMM of ECC DDR memory in each of the DIMM sockets.

  A minimum of one DIMM per CPU must be installed; DIMMs may be added singly after that. DIMMs must be installed in matched pairs for Mirror Mode.

  Refer to the Planning information section or the System x server website for memory options.
- Microprocessors must be of the same type, power level, and clock speed on each BladeCenter HS23. Mixing microprocessors of different speeds, power levels, or cache sizes or upgrading the base processors is not supported.
- Not all microprocessors are supported in all chassis. The latest BladeCenter hardware and software compatibility is available at

  http://www.ibm.com/servers/eserver/serverproven/compat/us/
- The new IBM BladeCenter HS23 is supported in the BladeCenter H chassis (#8852), the BladeCenter HT chassis (#8740, 8750), the BladeCenter E chassis (#8677), and the BladeCenter S chassis (#8886).

For the most current list of supported configurations, refer to the latest BladeCenter hardware configuration tools at

http://www-03.ibm.com/systems/x/hardware/configtools.html

Refer to the Software requirements section for operating system limitations.

Planning information

Customer responsibilities

This product is designated as customer setup. Customer setup instructions are shipped with the product.

Configuration information

BladeCenter HS23 models must be installed in a BladeCenter chassis.

BladeCenter configuration

Processor upgrades

For systems that come standard with one Intel Xeon processor, an additional processor may be added by purchasing a supported processor option. The optional processor must match the initial processor in each system.

The following processor options are supported with the new BladeCenter HS23 models:

- Intel Xeon Processor E5-2603, 1.8 GHz, 10MB Cache, 4c, 80w, 1066 MHz (81Y9292)
- Intel Xeon Processor E5-2609, 2.4 GHz, 10MB Cache, 4c, 80w, 1066 MHz (81Y9294)
- Intel Xeon Processor E5-2620, 2.0 GHz, 15MB Cache, 6c, 95w, 1333 MHz (81Y9295)
- Intel Xeon Processor E5-2630, 2.3 GHz, 15MB Cache, 6c, 95w, 1333 MHz (94Y8572)
- Intel Xeon Processor E5-2640, 2.5 GHz, 15MB Cache, 6c, 95w, 1333 MHz (94Y8571)
- Intel Xeon Processor E5-2650, 2.0 GHz, 20MB Cache, 8c, 95w, 1600 MHz (81Y9298)
- Intel Xeon Processor E5-2660, 2.2 GHz, 20MB Cache, 8c, 95w, 1600 MHz (81Y9299)
- Intel Xeon Processor E5-2643, 3.3 GHz, 10MB Cache, 4c, 130w, 1600 MHz (81Y9301)
- Intel Xeon Processor E5-2667, 2.9 GHz, 15MB Cache, 6c, 130w, 1600 MHz (81Y9302)
- Intel Xeon Processor E5-2630L, 2.0 GHz, 15MB Cache, 6c, 60w, 1333 MHz (81Y9304)
- Intel Xeon Processor E5-2650L, 1.8 GHz, 20MB Cache, 8c, 70w, 1600 MHz (81Y9305)
- Intel Xeon Processor E5-2670, 2.6 GHz, 20MB Cache, 8c, 115w, 1600 MHz (81Y9418)
- Intel Xeon Processor E5-2637, 3.0 GHz, 5MB Cache, 2c, 80w, 1600 MHz (94Y8570)
- Intel Xeon Processor E5-2648L, 1.8 GHz, 20MB Cache, 8c, 70w, 1600 MHz (94Y8562)
- Intel Xeon Processor E5-2658, 2.1 GHz, 20MB Cache, 8c, 95w, 1600 MHz (94Y8565)

Powerconsiderations

The BladeCenter HS23 is supported in the BladeCenter chassis.

Note: Consult specific chassis announcements for more information on setup and redundancy.

Cable orders

Each BladeCenter blade contains onboard Ethernet connections. An optional BladeCenter Ethernet Switch Module must be installed in the BladeCenter to support external Ethernet connections.

Cabling is not included with the server. Consult the Ethernet Switch module documentation for external cabling requirements.

Installability

Each BladeCenter HS23 requires approximately 10 minutes for installation. Installation includes unpacking, setting up, and powering on the system. Additional time is required to install an operating system, additional options, or features.

Packaging

BladeCenter HS23

Product	Package description	Boxes
BladeCenter	BladeCenter Carton	1
	Contents:	
	BladeCenter HS23	1
	Publications/CD Package	1
BladeCenter	Publications Package	1
	Contents:	
	Documentation CD-ROM (softcopy of publications)	
	Important Notices	
	Warranty Flyer	

The BladeCenter HS23 blades are shipped in a single package. The approximate shipping dimensions and weight are:

- Single pack dimensions: 60.32 x 33.4 x 15.57 cm (23.75 x 13.13 x 6.13 in)
- Single pack weight: 4.2 kg (9.2 lb)

Note: Above dimensions and weights refer to a single-wide HS23. Addition of one or more Expansion Blades increases dimensions and weight.

Security, auditability, and control

Security and auditability features include:

- A power-on password function helps provide control of who has access to the data and server setup program on the server.
- A set unattended boot mode allows the system keyboard to be locked to all entries except the password and at the same time allows other computers on the network to access the system disk drive.
- A selectable boot sequence can be used to help prevent unauthorized installation of software or removal of data.

The BladeCenter HS23 blades have no security intrusion detection. Therefore, they should be installed in a rack environment that provides security through lockable

doors or other security measures. It is the client's responsibility to ensure that the server is secure to protect sensitive data.

The customer is responsible for evaluation, selection, and implementation of security features, administrative procedures, and appropriate controls in application systems and communications facilities.

Global Technology Services

Contact your IBM representative for the list of selected services available in your country, either as standard or customized offerings, for the efficient installation, implementation, and/or integration of this product.

IBM Electronic Services

IBM has transformed its delivery of hardware and software support services to help you achieve higher system availability. Electronic Services is a web-enabled solution that offers an exclusive, no-additional-charge enhancement to the service and support available for IBM servers. These services are designed to provide the opportunity for greater system availability with faster problem resolution and preemptive monitoring. Electronic Services comprises two separate, but complementary, elements: Electronic Services news page and Electronic Services Agent.

The Electronic Services news page is a single Internet entry point that replaces the multiple entry points traditionally used to access IBM Internet services and support. The news page enables you to gain easier access to IBM resources for assistance in resolving technical problems.

The Electronic Service Agent™ is no-additional-charge software that resides on your server. It monitors events and transmits system inventory information to IBM on a periodic, client-defined timetable. The Electronic Service Agent automatically reports hardware problems to IBM . Early knowledge about potential problems enables IBM to deliver proactive service that may result in higher system availability and performance. In addition, information collected through the Service Agent is made available to IBM service support representatives when they help answer your questions or diagnose problems. Installation and use of IBM Electronic Service Agent for problem reporting enables IBM to provide better support and service for your IBM server.

To learn how Electronic Services can work for you, visit

http://www.ibm.com/support/electronic

Terms and conditions

To obtain copies of the IBM Statement of Limited Warranty, contact your reseller or IBM .

Warranty period

- Three years
- Optional features: One year

Note: For configurations that support the RAID battery, the RAID battery will be warranted for one year effective on its "Date of Installation." All other product warranty terms for the machine remain unchanged.

An IBM part or feature installed during the initial installation of an IBM machine is subject to a full warranty effective on the date of installation of the machine. An IBM part or feature that replaces a previously installed part or feature assumes the remainder of the warranty period for the replaced part or feature. An IBM part or

feature added to a machine without replacing a previously installed part or feature is subject to a full warranty effective on its date of installation. Unless specified otherwise, the warranty period, type of warranty service, and service level of a part or feature are the same as those for the machine in which it is installed.

The following have been designated as consumables or supply items and are, therefore, not covered by this warranty:

- Top cover
- Fillers
- Front bezels

Warranty service

If required, IBM provides repair or exchange service, depending on the type of warranty service specified below for the machine. IBM will attempt to resolve your problem over the telephone or electronically by access to an IBM website. Certain machines contain remote support capabilities for direct problem reporting, remote problem determination, and resolution with IBM . You must follow the problem determination and resolution procedures that IBM specifies. Following problem determination, if IBM determines On-site Service is required, scheduling of service will depend upon the time of your call, machine technology and redundancy, and availability of parts. Service levels are response-time objectives and are not guaranteed. The specified level of warranty service may not be available in all worldwide locations. Additional charges may apply outside IBM's normal service area. Contact your local IBM representative or your reseller for country- and location-specific information.

The type of service is Customer Replaceable Unit (for example, keyboard, mouse, speaker, memory, or hard disk drive) Service and On-site Service.

Customer Replaceable Unit (CRU) Service

IBM provides a replacement CRU to you for you to install. CRU information and replacement instructions are shipped with your machine and are available from IBM at any time on your request. A CRU is designated as being either a Tier 1 (mandatory) or a Tier 2 (optional) CRU. Installation of Tier 1 CRUs, as specified in this announcement, is your responsibility. If IBM installs a Tier 1 CRU at your request, you will be charged for the installation. You may install a Tier 2 CRU yourself or request IBM to install it, at no additional charge, under the type of warranty service designated for your Machine.

Based upon availability, a CRU will be shipped for next business day (NBD) delivery. IBM specifies in the materials shipped with a replacement CRU whether a defective CRU must be returned to IBM . When return is required, return instructions and a container are shipped with the replacement CRU, and you may be charged for the replacement CRU if IBM does not receive the defective CRU within 15 days of your receipt of the replacement.

The following parts or features have been designated as Tier 2 CRUs for the BladeCenter HS23:

- System Planar Board
- Processors (CPUs)

Other parts, including the following have been designated as Tier 1 CRUs for the BladeCenter HS23:

- Solidstate drive
- Memory DIMM
- Daughter cards
- Service label
- System label

- CMOS Battery

On-site Service

At IBM's discretion you will receive CRU service or IBM or your reseller will repair the failing machine at your location and verify its operation. If required, On-site Repair is provided, 9 hours per day, Monday through Friday excluding holidays, NBD response. You must provide a suitable working area to allow disassembly and reassembly of the IBM machine. The area must be clean, well lit, and suitable for the purpose. On-site Service is not available in all countries, and some countries have kilometer or mileage limitations from an IBM service center. In those locations where On-site Service is not available, the normal in-country service delivery is used.

International Warranty Service

International Warranty Service (IWS) is available in selected countries or regions.

The warranty service type and the service level provided in the servicing country may be different from that provided in the country in which the machine was purchased.

Under IWS, warranty service will be provided with the prevailing warranty service type and service level available for the IWS-eligible machine type in the servicing country, and the warranty period observed will be that of the country in which the machine was purchased.

To determine the eligibility of your machine and to view a list of countries where service is available, visit

http://www-947.ibm.com/support/entry/portal/docdisplay?lndocid=GCOR-3FBJK2

For more information on IWS, refer to Services Announcement 601-034, dated September 25, 2001.

Licensing

Programs included with this product are licensed under the terms and conditions of the License Agreements that are shipped with the system.

Warranty service upgrades

IBM hourly service rate classification

Two

Field-installable features

Yes

Model conversions

No

Machine installation

Customer setup. Customers are responsible for installation according to the instructions IBM provides with the machine.

Licensed Machine Code

IBM Machine Code is licensed for use by a customer on the IBM machine for which it was provided by IBM under the terms and conditions of the IBM License Agreement for Machine Code, to enable the machine to function in accordance with its specifications, and only for the capacity authorized by IBM and acquired by the

customer. You can obtain the agreement by contacting your IBM representative or visiting

http://www.ibm.com/servers/support/machine_warranties/machine_code.html

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Corrections

(Corrected on May 18, 2012)

Warranty period information was revised.